KNOWLEDGE MENAGEMENT

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Abstract

The main aim of European Union is "to become the most competitive and dynamic world economy based on knowledge, capable for viable economic growth with better work places and greater social cohesion". Competitive advantage in "new economy" has passed from material and financial assets on (to) non-material and non-financial belongings. The key challenge for 21st century companies is knowledge defining, measuring, advancing, valuing and controlling.

Characteristics of economy based on knowledge are:

- knowledge is used as input and as output,
- in the most developed countries i the world, more than half gross of domestic product is based on knowledge,
- high technology Industries nearly have doubled their share in output in last two decades, while services based on knowledge increase faster, too,
- in new employing number of " knowledge " workers brings on an overage 80% of new jobs, and
- increasing of information and knowledge portions in production technologies, but in products, too.

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1.Knowledge controlling-what is this ?

Knowledge controlling is the process of searching, organizing and using selected information and experiences, whether they are in formal shape or they are hidden in people's heads with intention to be applied there, where they can help in problems solving.

Knowledge controlling is a discipline that stimulates onto systemic access to defining, controlling and exchange of informatics belongings of a company. Informatics belongings includes base datas, documents, rules and procedures, as formalized knowledge and individual experiences of employees. The most important reasons because of which it is necessary to access to the knowledge controlling in systemic way are:

- Knowledge controlling is a complex of processes that help at knowledge assimilation,

expansion and use (Newman, 1991),

- Knowledge controlling is the process of searching, organizing and using selected information and experiences, whether they are in formal shape or they are hidden in people's heads with intention to be applied there, where they can help in problems solving (Justin Hibbard),
- Because of fast changes in production technology, politics and in legislation, it is the last moment for organizations to get necessary new knowledge's,
- Because of fast development the greater part of knowledge in organizations becomes fast outdated.
- Reducing number of employed because of rationalization and reducing of expenses, leads to loss of knowledge for organization. Because of that is necessary organized access for knowledge storing,
- Knowledge gives competitive advantage to organization, and
- Fast development of IT (informatics technology) enables much better support to the processes of knowledge controlling.

The process of creation, coordination and storing, transport (transfer) ands application (reusing) (of) knowledge in order to increase organization efficiency. It refers to people, culture, values, technologies and practice.

The development of knowledge controlling gives an interesting example of approaching informatics services to business activities, in wider sense. The concept of knowledge controlling comes from demands of economy. Striving to find the way in order knowledge to become capital, many systems try to transform themselves from abstract category in concrete, measurable value. Such efforts are directly connected with new concepts: from informatics and technology processes as far as new business philosophy. Market totality points out in the foreground knowledge as essential value of successful companies. Qualitative controlling of knowledges hidden in company becomes imperative of successful business operation. According to some estimations even 70-80% employed in organizations have hidden knowledge (tacit). It concretely means that most of nowadays organizations do not know what they know. In literature about knowledge controlling mainly are considered problems from philosophical, organizational, respectively from informatics aspect. Generally that literature emphasizes role of training and advancing performances in creation and controlling of knowledge system, there is little of that contents which give practical advices for putting in motion and leading such projects. In businesslike background organizational knowledge becomes chief trump for market prestige.

From the other side, **Brian (Bo) Newman** from **The Knowledge Management Forum** says that "Knowledge controlling is the collection of processes controlling creation, by separating and using knowledge". Less formally, knowledge controlling presents system for knowledge controlling in company. Consequently, controlling all knowledge resources, so to enable faster access to knowledge and its manifold using, usually uses modem information

technologies. The aim of knowledge controlling is to classify and categorize according to in advance (pre) destined model for knowledge description (ontology), for given company, what enables to use stored knowledge in the best possible way. Knowledge sources vary depending on concrete industry and application, but mainly comprise various manuals for work, letters, service reports, clients' answers, as well knowledge obtained in various working processes. Various kinds of modem (information) technologies can be used for implementing management system by knowledge: e-mail, data bases, **data warehouse**, systems for support to group work, " **Internet browsers**, internet and intranet, expert systems, systems based on knowledge, as well intelligent agents.

Industrial culture	**Knowledge culture**	
Organizatin	Hierarchy	Teams and networks
Focus	Profit	Buyer
Culture	Responsibility inspection	Division of responsibility
Key measurements	Efficiency	Effectiveness

2. Setting of knowledge infrastructure

Knowledge infrastructure is a system for support, that consists of gathering of organizational structures and directives and (technical and non-technical) means that support learning processes necessary to realize knowledge policy aims of an organization in an efficient way. Knowledge infrastructure depends on established knowledge policy and of structure of level (in terms of culture) of working background (confidence of employed, readiness to "divide" knowledge with others, possibility to stimulate such work etc.). Knowledge infrastructure is set on the basis of executed knowledge controlling of existing informatics infrastructure in company.

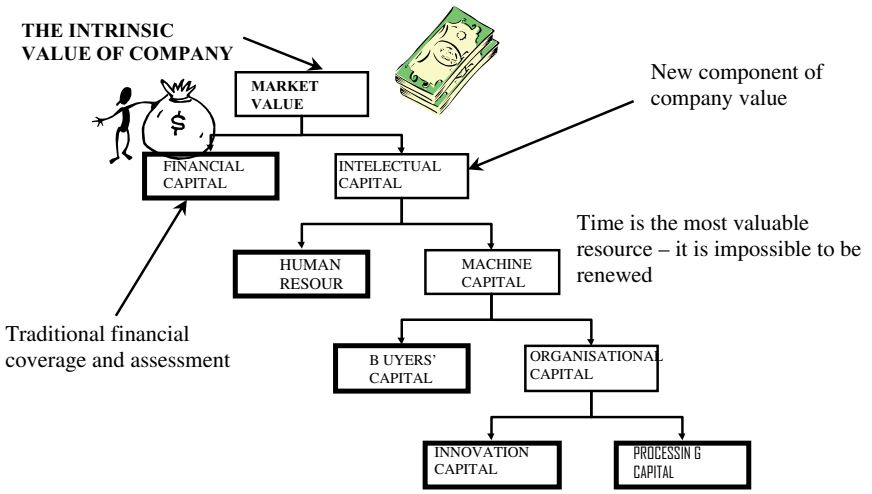
Knowledge comes from intellect during work. It is totality of all that has been learnt, found out or deduced. Knowledge is fluid mixture of formed experience, worth, connected information and expert opinions that provides frame for evaluation and including new experiences and information. This originates and is used in minds of experts. In organizations, knowledge is often stored not only in documents or archives (knowledge bases) but also in organizational routines, processes, practices and norms. Knowledge is necessary for good concluding, respectively for identification and understanding of cause effect relations that influence on business activity of organization, and so on the ability of its future prediction. Knowledge generates from information in the same way as information generate from data. Information, in order to become knowledge, must be transformed: by consideration, comparing, connecting and by cause-

effect connection. One of reasons why knowledge is more important than data and information is its ability to stimulate to action. Knowledge originates on experience basis, respectively cognitions from past on which basis one may observe new events and situations. It helps in understanding and judging complex situations, too.
Knowledge classifications are important because in their directives are expressed aims of learning. Learning aims are the first elements of curriculum system from which one derives appropriate programs, suitable procedures of teaching and learning as well procedures of valuing.
Gagne's system of knowledge categories is hierarchically organised according to transfer value of separate kinds of knowledge. The least transfer value have specific verbal information, id est, factographical knowledge, and the greatest value cognitive strategies.

1. ***Verbal information*** are facts, respectively data and statements that are stored in long-lasting memory. Verbal information make ***declarative knowledge***. It may be ofdifferent complexity-from simple factographic knowledge up to the knowledge of complex theoretical constructs.
2. ***Intellectual skills*** are knowledges of how something is performed or achieved. It is procedural knowledge which according to its complexity varies from simple language skills, as composing sentences, to complex engineering skills or skills of scientific researches.
3. ***Cognitive strategies*** are the most important intellectual skills. They are competence for controlling one's own cognitive processes: learning, memory and opinion. With metacognitive knowledge we follow our own cognitive process, so they hasten learning.

3. Good knowledge controlling

They key of good knowledge controlling system is its structuring. Without structure for knowledge classification - directing only to its distribution - we should be drowned in the sea of useless data. The way how one organises, marks and controls knowledge is critical for functions of work place, themes, products, stages in processes or procedures. Authority in the field of knowledge controlling Thomas A. Stuart has calculated that at one time products expenses have been 80% for material and 20% for know-how. Nowadays that relation is 70:30, but in favour of knowledge. Swedish insurance company Scandia has even appointed manager for intelectual capital whose only one duty is to coordinate the intelectual potential of the company. Process of creation, coordination and storing and application (repeated using) of knowledge in order to increase efficiency of organisation. It refrs to people, culture, values, technologies and practice.



Picture 1.Value structure of company

Accesses to knowledge are:

- Technological access - observes the problem of knowledge controlling from technological standpoint and its **emphasis** is on better access to information, especially to advanced methods for obtaining and using documents (hyperlinks, data bases, text search and the like). Key role play network and communication technology, Internet, intranet, groupware,
- Culturological access -The necessity for fundamental change of businesslike culture and human behaviour is stressed, one insists on education, creativity and innovation ("Organisation that learns"),
- Evolution access - neither unconditionally denies existing values nor prejudices new concepts. The key of successful knowledge controlling is in support to managementand employed, deliberate implementing of new technologies into existing system, as well cadres competence and raising level of organisational culture.

Why is knowledge controlling necessary? There are many reasons: market is being globalized, rate of innovations raises, products and services are more and more complex, terms for knowledge absorbing are short, there is general trend for reducing number of employed, fluctuation of people, rotation of work places...

For many companies, knowledge controlling concretizes in four key fields:

- ***Innovatively***- finding out and implementation of new ideas, organising people in "virtual" developing teams, creating forums for cooperation and exchanging of ideas, and all that out of time and space restrictions,
- ***Speed of reaction***- is connected for disposability of information in organisation and to ones that need them and when they need them, so that they would solve clients"requests faster and more qualitatively. It implies recognizing even weak external signals in striving on which one should react soon after in order to achieve competitive advance,
- ***Productivity***- comprising and division of the best businesslike practice, as well otheruseful knowledges with the aim to annul redundant activities and reducing time for problems solving,
- ***Education***- constant development of skills and knowledges of employed through "on-line" trainings during work, distance learning, as well with other methods for raising capability level for better doing jobs.

Today one differs organisations in the world according to that what they know. Knowledge possessing can produce continual advantage. Even if competition reach quality and price, company rich with knowledge, during that period achieves new level of quality, creativity and efficiency.

3. Gaining of knowledge

There are several ways for knowledge gaining: acquisition, research, connecting, adjustment and networking.

- ***Acquisition***- the most direct and often the most efficient way of acquirement is its buying-respectively buying organisations or individuals that possess it. Organisations are bought because of various reasons: accomplishing additional incomes, branching business operations or assortment of products, opening new markets, and more often because of acquirement of knowledge, especially that one because of higher management. Knowledge may be hired out not only bought. Hiring out of knowledge really is hiring out its source. Recruitment of consultant for guidance of project is hiring a person with necessary knowledge, and it will remain as a value in organisation after hi s leaving.
- ***Research*** - one of ways for knowledge gaining is also setting up of special teams for research and development. The good of such teams is that they are not in principle burdened by short-term profit aims, so creativity and inventiveness are at prominently higher level than in other parts of organisation. One should, however, stress, that such method is rather expensive, effects are slow and uncertain, and implementation in real conditions is very complex.
- ***Combination*** - Combining people with various know ledges and experiences consciously produce complexity, sometimes even conflict situation

with ultimate purpose of new synergy creation. Innovation is born in borderline areas of human meditation. People with various expert knowledges combined can generate very creative solutions. Although it may give extraordinary results, such method is very demanding in relation to necessary time and efforts to harmonize group members so that they begin to give results.

- ***Adjustment*** - new competitive product, new technologies, social and economic changes request from organisations their understanding and adjust to them.

Capability for adjustment is based on two basic factors:

1. infrastructural ability of executing job in other way, and
2. readiness for constant changes

One should stress that here is spoken about people which must accept fast new knowledges and skills, and also change existing work method.

5. Learning of interests and habits

Interests are separate kind of values. They are specific. An individual is preoccupied by a concrete activity. He deals with it mentally (in thoughts) or practically. In contrast to attitudes, and like values, interests express only positive relations (there are no negative interests), they are more general and their motivation structure is more expressive than with attitudes, so individual is more intensively obsessed with them, than with attitudes. Interests may be active or passive. According to contents, one can differentiate interests in view of field of activity (professional and non professional interests). Because of strong motivation activity, interests are necessary to be developed and directed by education. In education of grown - ups, interests are important because they produce motivation for education, and with education are formed and intensified professional and non-professional interests of grown-ups. Interests are developed by all forms of learning: with stipulation, imitation and inspection.

Habits are automated activities, learnt motivation human properties for which is essential structure of behaving and they mark proportionally lasting action tendencies. In neobehaviouristical conceptions they are essential units of behaviour. ***Habit is a learnt tendency of an individual for defined behaviour in a definite specific situation.*** For habit is substantial that it is a learnt tendency for reproducing of a defined, learnt behaviour. In other words behaviour may be learnt, but not habit unless it is learnt tendency of its reproducing in certain situation. Many habits of the same kind may be integrated into a characteristic that becomes unique general habit. So, for example, characteristic of neatness contains sequence of specific hygienic and other habits. ***The difference between habit and attitude*** - in habit is less expressed emotional structure, but more motivation one (behavioural). Namely,

it is possible to possess habit according to which subject has negative attitude (different dependencies) but he / she has not willpower to resist them. Habits are result of learning although there are result of learning although there are genetic dispositions for some of them. They are dominantly acquired by instrumental stipulating, i.e. by rewarding wanted behaviour, and with it, it is strengthened according to "effect of law". Habits are gained also by intended and unintended imitation of model. One can break off damaging habits by the procedures of "behaviour modification".
As modern theory of learning that connects knowledge: how to lead a pupil from starting up to the wanted state of his cognitive and conative properties, it is substantial structure of modern curriculum theory. Hence curriculum theory integrates and gets to know also other educative (educological?) disciplines, so it applies them at microlevel of educational - upbringing system.

6. The Challenge of Knowledge Controlling System

In most cases, critical factor is capability of people for knowledge division. There appears the question: If someone has already got knowledge, why would he divide it with others, why would not he keep power and success only for him? The simplest and fastest way for transfer of knowledge is to find persons in organisation that possess it in smaller organisations, in those large ones, with functional, hierarchial and geographical division it is not aplicable. Therefore it is necessary to establish mechanisms for institutionalization of collecting, organising, work and developing of knowledge in all segments of organisation. Those mechanisms can be changed in two directions:

1. Those who provide direct communication and change of knowledge among individuals,
2. They who collect and store knowledge to use it when it is necessary.

Establishing high level of organisational culture is one of necessary assumptions for knowledge controlling. Various organisations have in different ways tried to stimulate ability of employed to knowledge division. It is no secret that "knowledge is power". The fact is that knowledge controlling has political character, too. If knowledge is connected with power, money and success, then there are also lobbyings, intrigues and various behind - the - scenes games.
Providing for quality and updating of information. Institutionalized mechanisms of knowledge division absorb and store knowledge with essential aim of its conversion into organisational capital. On one side it presents enormous potential that provide transparency of knowledge, while on the other side danger is in "information overdosing". Therefore central knowledge basis

(repository) has to be carefully reorganized, maintain and update. Advantages given by knowledge controlling are recognizable only when information begin to be used at the level of whole organisation.

Implementation of the system for knowledge controlling. The price of implementation and use of knowledge controlling system may be very high. For example Me. Kinsey and Company spends cca 10% of turnovers for knowledge controlling. Those means are very significant, one remarks. But, it is quite possibly that the same means would be spent on ignorance - wrong decisions, iteration of jobs that have not been done well first time, mitigation of negative consequences with unsatisfied buyers.. .

How much of income has been directly or indirectly lost because even well done job has not been done more better.

There are two main strategies for implementations of the knowledge controlling system:

- Codification - uses central basis of documents (repositories) where are stored documents and patterns that can be again used and modified according to needs of future projects (Andersen Consulting, Ernst & Young).
- Personalisation - is connected with persons that have developed knowledge and they divide it exclusively through personal contacts. The purpose of computer and network infrastructure is to help people in knowledge exchanging, not its storing (Mc. Kinsey, Bain).

Of course, it manifests and confirms with the one because of which everything began – with buyer.

Information that may be put into knowledge bases:

Organisational data	**Politics Documentation and procedures Proceedings Reports**
Clients' dana	**Lists of existing buyers Lists of potential buyers Relations with buyers (activities,objects, projects)**
Data about products	**Brochures Catalogues Manuals Technical Documentation Price Lists References and Buyers' statesments**
Data about staff	**List of staff Courses Memberships**

If investment in knowledge controlling evaluates correctly, significant organisational benefits may be achieved:

- expert knowledges and necessary information are available to all - capability of repeated using of acquired knowledge reduces expenses, stops repeated peoplearrangement at somewhere already solved problems and again contributes wort to organisation.

- getting notices and work places rotations do not disturb businesslike process-accessto expert knowledges makes organisation not so vulnerable during work place rotation.
- instruction time and schoolings of existing and new workers is shorther – higherlevel of organisational knowledge and culture enables shorter and more efficient cycle of cadre education.
- higher level of cadres sensibilities to buyers' information and other market signals-educated and competent staff may better recognize market signals, even those weaker, and so it can better react on them.
- buyers' requests are solved significantly faster and more qualitatively – problems are solved better, and it brings more pleasure, and with it is higher level of buyers' loyality.
- staff that qualitatively and well works is motivated - creating competitive, victorious sense in organisation additionally improves performances of organisation.

7. Intelectual capital

Many of us keep confusing concepts of knowledge controlling and intellectual capital. The latter is an attempt of adding financial value to organisational knowledge (personal and codified). Although one value calculation of intellectual capital connects with knowledge controlling, focus is however on financial, not on controlling categories.
Intelectual capital of organisation may be divided in ***human capital*** (knowledge, ability,
inventiveness, innovation of employees) and ***structural capital.*** The latter implies buyers as capital (buyers' quality, pleasure, loyality, sensibility to changes of prices) and ***organisational capital.*** The latter is again divisible into ***capital of innovations*** (copyrights, patents and the like) and ***capital of businesslike processes*** (standards, procedures, work instructions etc.).
There are a sequence of techniques that can help to valorise value of non-material capital, including also intellectual one: Relative value appraisal, Balanced Scorecard, Model Competency Follow-up of subsystems performances, Benchmarking, Bussiness like valorization, Audit of businesslike process, Knowledge Bank etc.
Knowledge controlling is complex discipline, and it is very important expectations to be placed in right way. Changes can not be realized fast because they include human factor and people's beliefs; expecting fast changes is unreal. Knowledge controlling is also risk investment because it includes a sequence of other disciplines and requires a quite new access and way of thinking. At the some time, in rival sense, expenses of non-investment in knowledge controlling system may be significantly higher that investment itself. Knowledge controlling is not a notion that defines only learning process, but all

strategically using of knowledge in order to achieve higher level of buyers' pleasure and better market positions. Longterm effect is that every individual in organisation constantly learns, enjoys in his work and becomes every day more and more valuable to his organisation.

8.Promgram of knowledge controlling

The knowledge controlling project may be applied and established in company through three following phases:

1. development of thorough infrastructure, human and organizational assumptions for knowledge controlling,
2. identifying and development of fields of critical knowledges for businesslike success of company,
3. linking internal (company) knowledge with knowledge accessible in background, and which is considered relevant for company functioning The most frequent reasons because of which expected advantages of knowledge controlling are not in full realized, as well are:

- less users' understanding due to lack of Communications,
- daily use is not integrated into businesslike practice,
- less time for learning system is too complicated,
- lack of training,
- users do not see private benefit in use,
- advanced management does not support project.

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